CHAPTER: III

Hindustan Aeronautics Limited, Bangalore

Financial Module under ERP Package

Highlights

Selection process of ERP software was not transparent as British Aerospace and Hindustan Aeronautics Limited (BAeHAL), the implementing partner was also involved as consultant in assessment and finalisation of software.

(Para 3.7.1.1)

The Company did not obtain the system design documentation resulting in total dependence on the vendor and additional burden of recurring expenditure.

(Para 3.7.1 .1)

The Company had not yet formulated IT policy including IT security policy.

(Para 3.7.2.1 and Para 3.7.2.2)

Physical and logical controls were weak and the data had not been classified for its criticality and sensitivity.

(Para 3.7.3)

There was absence of input and process controls through validation checks.

(Para 3.7.6 and Para 3.7.7)

Fixed assets valuing Rs.5.90 crore were fully depreciated in contravention of the accounting policy of the Company

(Para 3.7.8)

Due to non provision in the system design, vouchers involving Rs.737.68 crore were prepared manually to reconcile the system balances and accounts balances and fed into the system during the finalisation of the accounts of the year ended 31 March 2007.

(Para 3.7.9 (i))

Due to non integration of modules, inventory worth Rs.37.79 crore was not accounted as "Goods in transit" though they were treated as received.

(Para 3.7.9 (ii))

3.1 Introduction

Hindustan Aeronautics Limited (Company) was set up in the year 1964 under the administrative control of Ministry of Defence. It is engaged in design, development, manufacture, upgrade, repair and overhaul of aircraft, helicopters, aero engines, avionics & navigation system equipment and marine and industrial gas turbine engines for both military and civil applications. It has 16 production divisions situated at Bangalore, Hyderabad, Nasik, Koraput, Korwa, Kanpur and Lucknow and Corporate Office at Bangalore.

The Company decided (April 2003) to implement ERP from Industrial Finance System (IFS) package with the following objectives:

(i) To facilitate implementation of uniform procedure and practices.

(ii) On-line information for decision making at the division, complex and corporate level.

(iii) Integrated and inter-operable system amongst divisions eliminating isolated islands of automation.

British Aerospace and Hindustan Aeronautics Limited (BAeHAL), a joint venture of the Company was awarded the contract to implement the package in three pilot sites. The work on remaining 14 sites of the Company was contingent on the success of software at pilot sites. BAeHAL started the work of implementation in the pilot sites in July 2004.

3.2 Organisation

The Director in charge of IT was assisted by a Chief Information Officer (CIO) at the level of General Manager in Corporate Office and Deputy General Managers in the divisions who reported through CIO.

3.3 Scope of Audit

The scope of Audit included;

(i) review of planning, acquisition and implementation of ERP package,

(ii) review of utilsation of Financial module of IFS at three pilot sites (i.e.) Corporate Office, Aircraft Division and Helicopter Division, and

(iii) analysis of data of the IFS system since implementation i.e. from 2005 including the migrated legacy data.

3.4 Audit methodology

IT Audit methodology included:

(i) discussions, correspondence, questionnaire issued to Management, and

(ii) data extraction and analysis from the reports, query and data entry screen using Computer Assisted Audit Techniques.

3.5 Audit objectives

The objective was to review the performance of IFS - Financial module at pilot sites (Corporate Office, Aircraft Division and Helicopter Division) and assess that:

(i) The system documentation was adequate to ensure efficient and continuous operation of the system.

(ii) Data was complete and reliable in integrity aspects.

(iii) Business rules of the Company were correctly mapped.

(iv) IT Controls in the system provided reasonable assurance for the intended objectives.

3.6 Audit criteria

The following constituted the audit criteria:

(i) Best practice in IT system and Corporate IT policy/plan.

(ii) Business rules, manuals and procedures.

3.7 Audit findings

3.7.1 System acquisition, development and implementation

The IFS application contained Financials, Sales and Support, Engineering, Manufacturing, Distribution, Maintenance and Human Resources modules. The general review on adequacy and effectiveness in the process of planning, acquisition and implementation of IFS package revealed the following:

3.7.1.1 Implementation issues

BAeHAL as an IT consultant to the Company was involved in preparation of IT plan and was also a member of the core group constituted in decision making for selection of ERP package. BAeHAL was ultimately awarded the implementation of the ERP-IFS package and thus, was involved right from planning to the execution of ERP-IFS package.

It was noticed in audit that the Company signed ' Go Live certificate' between September 2005 and January 2006 for the pilot sites without getting satisfactory working results of all the modules envisaged some of which were not started by BAeHAL. The firm failed in successful customisation of ERP-IFS software as discussed in the subsequent paras. Identifying a valid URS was not done. This resulted in frequent modifications and inordinate delay in modules development and implementation.

(i) The Company did not obtain the system design documentation from the vendor due to which the Company had to depend on the vendor even for minor modifications and consequently, there was recurring expenditure. The Company incurred Rs.11.54 lakh for getting support relating to account closing activities and additional Rs.43.65 lakh in entering support contract with BAeHAL despite having a full fledged ERP system.

(ii) Project quality document envisaged benefits of ERP-IFS through measurement of key performance indicators (KPI) in terms of expected reduction in time taken in accounting the purchases, processing the invoices, raising sales invoices, cost of sales computation, MIS preparation and finalisation of Annual Accounts. KPIs' indices were, however, not framed and applied in the developed software to evaluate the benefits associated in ERP implementation.

The Company accepted the audit observation.

3.7.1.2 Non utilisation of modules/ reports

(i) Lack of training and absence of timely transmission of data resulted in poor utilisation of the modules such as budgeting module, cost estimation module, dynamic order processing of production module, sub-modules like bank reconciliation, tendering system and purchase requisition and reports available in the system.

(ii) Even in the case of implemented modules, users in the divisions were not able to utilise the system for accounting and monitor the advances related to customers, payment process and resorting to manual controls, though the facility was available.

(iii) Due to non provision of contract prices in the system, billing for manufacturing activity was continued to be done through legacy system and later on posted to IFS.

3.7.2 General controls

General Controls create the environment in which IT applications and related controls operate. If general controls are weak, reliability of controls associated with individual IT applications i.e. application controls get diminished. Following deficiencies in general controls were noticed:

3.7.2.1 Lack of IT strategy and IT policy

(i) Though the Company was handling sensitive information, the Company had not yet formulated IT policy including IT security policy. On this being pointed out, Company stated that security policy would be formulated after study by Directorate of Forensic Science.

(ii) Risk assessment had not been conducted & documented to identify threat perception and safety measures for IT Department.

3.7.2.2 Lack of business continuity and disaster recovery

Business continuity and disaster recovery plan were not in place. The Company stated that these would be covered in draft Security Policy. Fire-safe off-site location for backups and periodical testing of the backup dump were not available in the present environment. To ensure business continuity in case of system failures, it was essential to test the back-ups taken at frequent intervals. The Company agreed to ensure this requirement.

3.7.2.3 Change management

Most of the change requests were communicated directly to the vendor by users and changes were made without involving IT department which indicated inadequate monitoring at implementation stage and risk of incomplete/incorrect information in the database.

3.7.2.4 Data migration

Migration of data after thorough cleansing is essential to ensure the correctness and completeness of data migrated. It was observed that due to incomplete data migration, details relating to an advance of Rs.17 crore and details for opening balances of "Deposits" (Rs.39 lakh) and "Claims" (Rs.58 lakh) were not available in the system. Thus, the Company continued to depend on the legacy system.

3.7.3 IT Security

3.7.3.1 Lack of physical and logical access controls

It was noticed that:

(i) Physical access controls were weak and access was provided even to employees on short term contract. The control through biometrics access though installed in Aircraft Division was yet to be implemented.

(ii) Inflammable materials were also dumped in server room. Fire alarm devices or smoke detectors were neither installed nor in working condition. Further, no protection was provided against natural disasters.

(iii) Control over IT assets was weak since no inventory of IT assets had been maintained and responsibility of the users on the IT assets was not fixed and documented.

(iv) No classification of data had been made according to their criticality and sensitivity.

(v) Controls through passwords were also found weak as there was no policy regarding minimum password length, structure, periodic changes in passwords, etc in practice at the pilot sites.

(vi) Logs relating to transactions including those of server enabling audit trails were not captured due to additional load/stress on servers. Though log sheets were said to have been maintained at Helicopter Division, the same were not produced to audit.

3.7.4 System design deficiencies

The module on IFS financials contained various sub-modules viz. budget, fixed assets, bills payable, bills receivable, costing, material accounts and book keeping. Failure to design the required controls at the design stage resulted in discrepancies like non uniformity in codification/database format, date validation, duplication of data/reports and wrong grouping of data/ reports. These deficiencies resulted in wrong accounting, incorrect grouping of transactions, unadjusted balances and incorrect payments as would be illustrated from the following cases:

(i) Life period validity in respect of all the assets was indicated as valid till year 2025 or 2049 without any basis and irrespective of the actual life of the asset.

(ii) The system did not provide for automatic provision of depreciation based on the date of receiving reports (RR) or updation of the state of the asset but depended on manual intervention. On analysis it was noticed that 23389 fully depreciated assets were shown as not fully depreciated. Further, for 142 assets valuing Rs.4.41 lakh which were added in 2006-07, the system displayed depreciated value under the previous year. Some assets already capitalised were shown as Capital Work In Progress.

(iii) The records relating to the general ledger and all the modules for the period December 2006 to March 2007 were kept open in May 2007 so as to allow transactions to be entered for that period even after closing of Accounts.

(iv) Manual feeding of weighted average cost resulted in over/under invoicing in sale orders as the system did not provide for automatic capture of cost from the material ledger to sale order.

(v) The adjustment of advances with creditors while making the final payments was not carried out automatically which resulted in generation of manual journal vouchers to the extent of Rs.360.09 crore.

3.7.5 Lacunae in customisation

There was lack of integration of different modules due to which data captured in a particular module could not be retrieved by another module for processing transactions. This necessitated manual interventions in the following transactions:*

(i) Processing of invoices/bills and system generation of invoice number/reference POs for drawing from other projects and to facilitate billing of repair, maintenance and service order.

(ii) Petty cash payments, operation of Imprest accounts.

(iii) The system was not designed to generate standard reports/returns like bank advice**,** sales register, customer advances register, summary report for Sundry Debtors.

(iv) Different items of Trial Balance for accounting were not customised in the system. It was noticed that items like labour cost, amortised expenditures segregation of cost of sales and others required manual intervention.

(v) System was not designed to generate reports like Goods in transit with relevant reference order and vendor details and as such validation of valuation and adjustment of payments in accounts was not possible through system.

(vi) System while generating a report related to PO wise payment details, added both the claim of the vendor and the bank debit advice and displayed an incorrect figure as payment made against the PO which exceeded the PO value by Rs.3.82 crore in 176 records. Consequently the generated data could not be relied upon. There was no discrepancy in the actual payments.

(vii) The report of inventory pending for inspection showed 1710 records with value of Rs.48.56 crore which did not match with the Goods in Transit as per accounts. It was observed that the pending RRs did not get updated due to a bug in the programme.

3.7.6 Lack of input control

Input control ensures that the data received for processing is genuine, complete, accurate, properly authorised and entered timely and without duplication and thus ensure the correctness and completeness of data. Manual interventions necessitated more input and supervisory controls. The data with blank/incorrect/ incomplete details, due to lack of input and supervisory controls, are illustrated below:

(i) Due to existence of multiple identities for same supplier firm, advances of Rs.86.54 lakh were shown as pending even though material had been received.

(ii) Inventory RRs showed negative quantity and value in 28 records, due to reversals; and in one case the value was Rs.(-)1,023.74 crore which was corrected later.

(iii) The closing work in progress was indicated as negative value in 22 work orders and zero value in 32 work orders and no description of the work was indicated against 39 work orders with value ranging from Rs.0.50 crore to Rs.4.47 crore.

(iv) Wrong grouping of asset/ incorrect rate of depreciation/ incorrect format of date of capitalisation resulted in incorrect depreciation leading to excess (Rs.14.22 lakh) and short (Rs.12.35 lakh) provisioning of depreciation.

(v) Details like date of acquisition and date of sale though available in the source document for 22 assets were not entered in the system.

(vi) Depreciation provided in the following cases could not be verified for their correctness since:

- Wrong inputs resulted in incorrect capture of asset code, irrelevant alphabets, etc**.,** in respect of 11290 records.
- Details like location, PO and the status of the asset were either incomplete/blank or were not codified uniformly as per codification scheme, due to which the class of asset and the rate of depreciation applicable in respect of 65186 assets valuing Rs.90.75 crore, could not be determined.

(vii) The coding pattern was alphanumeric but the input was not checked for any wrong coding either at data entry level or at supervisory level. This resulted in payments against 40 invoices though the supplier code started with "DUMMY".

(viii) Incorrect data entry of PO value and invoice value led to the display of wrong value of POs and higher invoice value in the system.

(ix) Description was not entered for 21 non moving inventory items valued at Rs.2.52 lakh.

(x) As the repair POs were not entered correctly in the system for accounting, items received back after repair were accounted as fresh receipts in the ERP system and valued at weighted average rates increasing the value of inventory by Rs.1.01 crore.

(xi) The system allowed:

- entry of receipt quantity in negative in 6060 records, and
- entry of receipts without indicating quantity in 12963 records valuing Rs.30.07 crore.

(xii) The invoice numbers were shown as negative/decimal figures in 1488 records. The value of closing balances/receipts of inventory items in 7997 records (-Rs.78.44 crore) were shown as negative.

3.7.7 Absence of validation checks

Validation checks ensure that the data conforms to the business rules and thus ensure the correctness and completeness of data. Lack of data validation made the data unreliable and few illustrative deficiencies are indicated below.

(i) The due date for payment of supplier bill varied from 0 to 247 days which was to be only 7 days.

(ii) Due to inadequacy of data feeding and validation for authorisation, 36 POs of 2005-06 remained unauthorised as of May 2007.

(iii) Out of 65535 payment voucher records analysed, the system accepted a date prior to the voucher date as entry date in respect of 294 records and the approval date earlier to the voucher date in 289 records.

(iv) The system allowed excess issues valuing at Rs.5.67 crore (723 records) over the balance inventory as on 31 March 2007.

3.7.8 Non mapping of business rules

The system was not designed to provide for mapping of the business needs which resulted in deviations with accepted practices. A few illustrative deficiencies noted are indicated below:

(i) The Balance Sheet designed in the system did not exactly match with Company's format. Hence, for grouping and fitting into format, extract of Trial Balance account wise was generated through IFS and copied to Excel sheet thereby, putting at risk the inbuilt controls in the system. The values were fed manually in the MS-Excel document to generate Balance Sheet as per the Company's format.

(ii) As per Company's accounting policy, assets with acquisition value less than Rs.10,000 had to be fully depreciated and the net value of the fully depreciated assets were to be maintained as Re.1. However, 36 assets with value less than Rs.10,000 were not fully depreciated and fixed assets each valuing more than Rs.10,000 were depreciated at 100 *per cent*, resulting in excess provision of depreciation by Rs.0.57 lakh. Further, 1920 fixed assets valuing Rs.5.90 crore were fully depreciated showing net value as '0'.

(iii) Non-integrity in outputs such as non display/non-matching of records/field value (8655 records) for which Aircraft Division agreed to take up the changes in the logic or in the data mapping with IFS.

3.7.9 Lack of system integration in finalising accounts

The audit objective was to review the implementation and performance of IFS-Financial module and ensure that input, processing and output controls were in place ensuring reliability and integrity of data for the finalisation of the accounts for the year ended 31 March 2007. The following major instances of non integration were noticed.

(i) Due to non provision in the design for accounting of exchange rate variations, penalty deduction, automatic offsetting of advances paid with creditors/ inventory, operation of duplication of supplier codes, automatic generation of fixed asset number to capitalise the asset on commissioning, automatic provision for redundant inventory, manual vouchers of Rs.737.68 crore were created to reconcile the system balances and the schedule balances in the accounts.

(ii) Items pending for inspection with value of Rs.37.79 crore were not taken into Goods in transit as the system provided for manual intervention to activate the entries. Though arrival entry was made in the system and Receiving Reports were not finalised, the system failed to provide for automatic accounting of these items as Goods in transit**.**

(iii) Items already taken into inventory and consumed were shown as 'in transit' and journal vouchers to the extent of Rs.24.63 crore were passed manually to adjust the account.

3.8 Conclusion

The Company decided to implement ERP-IFS package, a state of art technology, towards its IT reengineering efforts and made investments with the objective of having organised information on line but failed to get full benefits of the system. Failure to design the required controls at the design stage and a lacunae in customisation, resulted in: non

integration of different modules; poor utilisation of the modules; lack of input controls and validation checks; and finally to the ERP package not being used to its full potential. Moreover confidentiality, integrity and accuracy of the data was not ensured. Consequently, the computerisation project of the Company remained adhoc and the Company still depended on the legacy system, manual controls and various other utilities like MS Excel for accounting and finalising its Annual Accounts. Thus the attempt made by the Company to have integrated software failed to achieve the intended objectives.

3.9 Recommendations

Management should:

* Formulate an IT security policy and business continuity and disaster recovery plan based on a comprehensive risk assessment.
* Lay down a clear change management procedure to prevent unauthorised changes in the software and to maintain a trail of all the changes made.
* Review the application to ensure that all the business processes and rules have been properly built in.
* Strengthen input control, validation check and internal control procedure to ensure accurate data capture especially wherever manual intervention is required.
* Cleanse the master data to rectify the errors and eliminate the redundant data and establishing the procedure for periodical review of master data.
* Raise the level of user awareness and minimise errors of input data.
* Ensure that all relevant features in software are utilised and modify the business process wherever necessary to reap the benefit of ERP.

The matter was reported to the Ministry (December 2007); its reply was awaited.